

1882
P.B.C. ①
RECORDED

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Raising, Forcing, Aerating, Cooling, and Rousing Beer, &c.

(This Invention received Provisional Protection only.)

PROVISIONAL SPECIFICATION left by James Forbes and John Hamilton at the Office of the Commissioners of Patents on the 28th April 1882.

JAMES FORBES of Coventry in the county of Warwick, Brewer's Engineer and JOHN HAMILTON of Smethwick in the county of Stafford Brewer's Engineer
5 "IMPROVEMENTS IN RAISING FORCING AERATING COOLING AND ROUSING BEER AND OTHER LIQUIDS AND IN APPARATUS THEREFOR PART OF WHICH INVENTION IS APPLICABLE ALSO FOR HOP OR OTHER SPARGING."

This Invention has for its object an improved mode of raising, forcing aerating cooling and rousing beer oils or other liquids and also a new method of working the
10 ordinary rousing propellor by air acting upon beer or other liquids for aerating rousing and cooling, making it at the same time give an effect of aerating rousing, cooling forcing and expelling gases from such beer or other liquids: also the construction of a reciprocating tube traversed by suitable reversing mechanism along the top or sides of squares, vats tuns hop-backs or other vessels for aerating
15 pumping cooling and distributing beer or other liquids and to act as a sparger in hop-backs and other vessels.

Firstly. We propose to place in the ordinary squares, vats, tuns, or boilers, a copper or other tube, the bottom of which is enlarged and perforated with holes, and the top forming a bend of any length required. A short distance from the
20 bottom of the tube, a pipe is inserted turning upwards inside the tube, or at the top of the bend on the tube a pipe is fixed passing down inside the tube to a corresponding depth to the pipe inserted in the side, and is also turned up at the bottom.

The said small pipe or pipes are connected with an air pump, accumulator or reservoir of air. Upon the said air pump, accumulator or reservoir being set in
25 motion or opened to the air supply pipe, the beer or other liquid in the squares, vats, tuns or boilers is forced up the tube and through the large bend which may be standing 1, 2, 3 or more feet from the surface of the beer or other liquid and a sieve or perforated frame may be placed under the bend for the beer or other liquid to be discharged or fall in the form of spray into the square, vat, tun or boiler, so being
30 continually worked, circulated aerated and roused while the air pump accumulator or reservoir is in motion, or opened to the air supply pipe.

Secondly. Another form of tube may be placed in the square, vat, tun or boiler,

[Price 2d.]

Forbes & Hamilton's Impts. in Raising, Forcing, Aerating, Cooling, &c. Beer, &c.

similar in all respects to the above with the exception of the top which is made with a fountain head instead of the bend and the beer or other liquid is forced through the head and falls in the form of spray all round the enlarged fountain head into a perforated receiver or direct into the square vat, tun or boiler

Thirdly The next part of our invention has for its object improved means of 5
working the ordinary one two three or more-bladed or winged propellers or rousers. The upright shaft of the propellor or rouser is preferably made of tubing (although it may be made in any other way), the bottom of which is solid, working in a footstep and the top of the tube being carried by an ordinary or other bracket. At the top of the tube is fitted a swivel union or stuffing-box, to which is connected 10
an air supply pipe and at a convenient distance on the tube is fixed the propellor or rouser. The back of each blade or wing has a hole or a bent pipe having its communication with the inside of the tube an air pump, accumulator or reservoir being set in motion or opened to the swivel union or stuffing box on the top of the tube by a suitable pipe, forces the air down the tube through the holes or bent 15
pipes at the back of the blades or wings, thus forcing them round and rousing the beer or other liquid and at the same time cooling and aërating.

Fourthly. The last part of our invention relates to a novel reciprocating tube-aëerator cooler and distributor which is also applicable for hop or other sparging.

On the top or sides of the square vat or tun or hop back or other vessel we fix 20
rails or rods and upon the same mount one or more grooved pulleys on each end of a distributing or sparging tube. The tube is made to revolve or is fixed to the spindle which carries the grooved pulleys at each end. An endless chain or other suitable means is employed to work the tube from end to end of the square hop back or other vessel. The chain is fixed to the traversing tube spindle and passes 25
round a guide pulley at one end and a chain pulley carrying a toothed wheel at the other end. The said guide and chain pullies revolve on suitable studs fixed on the square, hop back or other vessel. On the chain pulley end and fitted to suitable brackets a counter shaft with fast or fast-and-loose pulleys is arranged carrying a toothed wheel fixed to the shaft and a hanging quadrant bracket is suspended by 30
the counter shaft, carrying two pinions gearing together and running loose on studs. One of the pinions is always in gear with the toothed wheel on the counter shaft and either the one or the other with the toothed wheel on the chain wheel shaft. By this means the chain is driven and the tube traversed along the square hop back or other vessel. 35

A latch rod is fitted to the quadrant carrying the pinions and suitable tappets are arranged on the traversing spindle or tube to operate the latch rod for reversing.

The spindle of the tube is made hollow to receive the supply pipe from the air or beer pump for aërating rousing and cooling or the water (or other) pipe for 40
sparging for hop backs or other vessels.

It is obvious that our invention may be used with a gas (such as carbonic acid or other suitable gas) instead of or with air, and that the mere mechanical details may be varied without departing from the principle thereof.